

**UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF INDIANA**

LIGTEL COMMUNICATIONS, INC.,

Plaintiff,

v.

BAICELLS TECHNOLOGIES INC.;  
BAICELLS TECHNOLOGIES NORTH AMERICA  
INC.,

Defendants.

Case No. 1:20-cv-00037-HAB-SLC

**DECLARATION OF  
JOSH WENTWORTH**

I, Josh Wentworth, declare the following:

1. I am the Network Operations Supervisor for LigTel Communications, Inc. (“LigTel”). LigTel was founded as a subsidiary of Ligonier Telephone Company in April 1998 and is a family-owned company that proudly provides broadband internet, television, and wireless telephone service in seven counties in northeastern Indiana. In my role, I design, implement, and maintain LigTel’s network infrastructure. I have been employed at LigTel for over fourteen years.

**I. HNI Codes**

2. I understand that LTE devices that provide broadband in the United States have a unique fifteen-digit number, called an International Mobile Subscriber Identity (“IMSI”). An IMSI includes three parts: (1) three-digit Mobile Country Code (“MCC”); (2) three-digit Mobile Network Code (“MNC”); and (3) nine-digit Mobile Station Identification Number (“MSIN”). The first six digits of the IMSI is known as a Home Network Identity (“HNI”) or Public Land Mobile Network (“PLMN”) code. This number identifies the carrier. The remaining nine digits identify that particular subscriber or device.

3. HNI codes in the United States always start with 310, 311, 312, 313, 314, 315 or 316, the MCCs that are assigned to the United States.

4. I understand that the IMSI Oversight Council (“IOC”), is a committee within the Alliance for Telecommunications Industry Solutions (“ATIS”), and governs the assignment and administration of the HNI code, and iconectiv is the US IMSI administrator, which means that it is the entity that does the day-to-day assignment and administration of HNI codes.

5. I understand that a network core is a central component of the wireless network that allows subscribers to connect to the Internet. The core coordinates the broadcasting signal,

contains information about LigTel's subscribers, and authenticates those subscribers using IMSIs and HNI codes so they can connect to the Internet.

6. From my work, I know that HNI codes serve many functions. Most importantly, they identify the network to which a subscriber belongs. That allows other providers to identify the source of an interfering signal, to manage customers roaming on another provider's network and to determine what (if any) roaming charges are required.

7. It is my understanding that HNI codes have always been six digits in the United States. In fact, I have never heard of a five-digit HNI code in the United States prior to learning of Baicells's use of one. I also know that the ATIS guidelines provide that all HNI codes in the United States are six digits.

8. I understand that the HNI system was first put in use by European and Asian operators who first adopted LTE technology. Some of those early European and Asian operators used five-digit HNI codes. While those early operators in Europe and Asia still use their five-digit codes, the United States more recently adopted the HNI code system to standardize roaming with the development of LTE technology, and as a result, all United States HNI codes are six digits and have always been six digits.

9. It is also my understanding that using another carrier's HNI code without approval is not permitted. Exhibit 1 is a true and correct copy of the IMSI Assignment and Management Guidelines and Procedures ("IMSI Guidelines") (Aug. 2018), found on the ATIS website, [https://www.atis.org/01\\_committ\\_forums/ioc/docs/IMSI-Guidelines-v15.1.1.pdf](https://www.atis.org/01_committ_forums/ioc/docs/IMSI-Guidelines-v15.1.1.pdf); sections 6 and 7 address the responsibilities of HNI code assignees. In addition, from managing LigTel's HNI code, I know that the IMSI Oversight Council guidelines require HNI owners to assign, efficiently

manage, and maintain up-to-date and accurate assignment records relating to their mobile terminals and users.

10. Based on my experience, to obtain a HNI code, one must submit a request to iconectiv, which is responsible for the assignment and administration of the HNI code. The guidelines do not allow an entity to simply decide on a HNI code on its own or to pick a number to use; rather, the guidelines prescribe requirements to obtain and maintain a HNI code. If iconectiv finds the applicant meets the requirements, iconectiv assigns the applicant an HNI code.

11. LigTel has received requests from law enforcement for information on LigTel subscribers. My understanding is that law enforcement is able to identify a suspect or target's cellular service provider based on the customer's IMSI number, which, as previously explained, has, as the first six digits, the HNI code used by the subscriber's equipment. My understanding is that law enforcement thus may use the HNI code to determine which company to serve with legally authorized process for a search, seizure, or surveillance when necessary.

12. On November 7, 2011, ATIS assigned LigTel an HNI code of 311980. Exhibit 2 is a true and correct copy of the letter from Telcordia d/b/a iconectiv confirming LigTel's HNI code assignment. LigTel has annually paid the maintenance fee since that date. Exhibit 3 is a true and correct copy of LigTel's proof of payment for the annual maintenance HNI code fees for 2018 and 2019.

## **II. LigTel Trade Secrets and Proprietary Information**

13. As part of its commitment to investing in cutting-edge infrastructure for its wireless service customers, in 2012 LigTel upgraded to an LTE network. LigTel engaged Huawei to help it build its LTE core. In order for Huawei to build LigTel's LTE core, LigTel would need to share its radio frequency configurations, IP infrastructure (both physical and logical), its network

engineering and architecture, the technologies LigTel employed to connect its networks, and LigTel's encryption code with Huawei. Accordingly, LigTel entered non-disclosure agreements with Huawei. Exhibits 4 and 16 are redacted true and correct copies of two non-disclosure agreements between Huawei and LigTel.

14. The non-disclosure agreements with Huawei are examples of how LigTel protects its confidential and proprietary information. In fact, LigTel takes a variety of measures to protect its trade secrets and proprietary information. For instance, LigTel requires all employees to sign confidentiality agreements and to be trained on cybersecurity policies. Exhibits 5 and 6 are true and correct copies of LigTel's cybersecurity policies, and Exhibit 7 is a true and correct copy of several confidentiality agreements signed by LigTel employees. LigTel also enters non-disclosure agreements with companies with whom it shares any propriety and sensitive trade secrets, just as it did with Huawei.

15. I was the primary employee at LigTel responsible for deploying that LTE network using a new LTE core which was manufactured by Huawei. LigTel was Huawei's first commercial deployment of an LTE core in North America.

16. In 2012, LigTel upgraded to an LTE network and engaged Huawei to assist in this upgrade. I worked closely with Huawei employees on the design, build, configuration, and maintenance of the LTE core. On LigTel's behalf, I provided Huawei with the confidential and sensitive information about our network needed to configure the core. Huawei agreed to a non-disclosure agreement, as is typical for such core installations. LigTel viewed the NDA as critical to ensure that our confidential and proprietary trade secrets remained protected. Those trade secrets are immensely valuable to our business.

17. I know from my work that the trade secrets that LigTel provided Huawei included radio frequency configurations, IP infrastructure (both physical and logical), network engineering and architecture, the technologies LigTel employed to connect its networks, and LigTel's encryption code, which encrypts communications between our subscribers and our network. Someone with possession of this information would be able to decrypt communications between LigTel's subscribers and LigTel's network, access customer traffic with LigTel's network, and spoof a connection and masquerade as a customer to gain unauthorized access to LigTel's network.

18. I worked directly with Ronald Mao, a Huawei employee, on technical projects related to LigTel's LTE core. Mao was one of the Huawei employees who worked on maintaining and expanding LigTel's equipment after the initial installation. Mao had access to all of the confidential trade secrets that LigTel shared with Huawei. For instance, in 2017, Mao was included on emails I sent discussing the locations of towers, development of the LTE work, and other proprietary information, all of which is a component of the network architecture. Exhibit 8 is a true and correct copy of an April 17, 2017 email from myself to Huawei employees, including Mao. My understanding is that Mao left Huawei to work at Baicells.

### **III. Interference and Investigation**

19. On June 21, 2019, I was contacted by Jeff Brown at Viaero Wireless, a wireless service provider in northeast Colorado, about a possible interference caused by a carrier appearing to use LigTel's HNI code in Nebraska. Exhibit 9 is a true and correct copy of a June 21, 2019 email from Brown confirming our telephone conversation. Viaero's interference problem surprised me, because LigTel has never done any business in Colorado or Nebraska. On June 26, 2019, Brown contacted me again to let me know that the night before, on June 25, 2019, Viaero identified equipment from Sandhills Wireless in Nebraska that was transmitting a signal that

appeared to be LigTel's signal because it had HNI code 31198. Exhibit 10 is a true and correct copy of the June 26, 2019 email from Brown to me providing this information. I explained to Brown that LigTel did not provide any services in Nebraska.

20. Brown discovered that the interference was caused by Sandhills Wireless LLC broadcasting a PLMN of 311980 using equipment from Baicells. Brown also discovered that Baicells had posted on its website for their customers to use the HNI code "31198" when setting up their network on Baicells's core.

21. Baicells's use of 31198 makes it appear Baicells is using LigTel's HNI code. I ordered Baicells SIM cards to confirm what numbers appeared after their five-digit HNI code and found that the following numbers were zeros—in other words Baicells's SIM cards actually use LigTel's HNI code. Exhibit 11 shows true and correct copies of photos of the Baicells SIM cards that we received.

22. It is my understanding that Baicells is an equipment vendor that provides LTE service equipment and LTE core solutions to providers that are in the same business as LigTel. LigTel and Baicells have never done business together.<sup>1</sup> From reviewing public records online, it is my understanding that the founders of Baicells, Scott Xingang Liang and Yingzhe Ding, worked at Huawei before leaving to found Baicells. I also observed that Baicells's public website and other communications directed to industry, customers, and potential customers—including online updates, technical documents, and other materials—contained instructions for using an HNI code that appears to the world to be LigTel's.

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<sup>1</sup> As of January 20, 2020, my understanding was that LigTel and Baicells had no connections. Upon further investigation, I came to learn that in 2017 an official at LigTel was introduced to an official at Baicells and in 2018, I reached out to Baicells to discuss potentially serving as an equipment supplier. LigTel did not select Baicells to provide that equipment and has never done business with Baicells or otherwise worked with Baicells.

23. LigTel has never authorized Baicells to use its HNI code.

24. On or around July 2, 2019, I spoke with Sam Tetherow of Sandhills. He confirmed that Sandhills was using Baicells issued SIM cards with IMSIs that start with “311980.” Because this was an issue caused by Baicells (where Sandhills’s network was configured to LigTel’s MCC/MNC), I gave Tetherow a verbal confirmation that he could continue to transmit until informed otherwise. During the conversation, he seemed concerned and willing to cooperate. He also stated that he worked as a consultant for at least one additional wireless internet service provider in Nebraska that is using the Baicells cloud system and using the HNI code “311980.”

25. On June 28, 2019, we sent a cease and desist letter to Sandhills demanding that it stop its unauthorized use of an HNI code that appears to the world to be LigTel’s. After continued – and positive – discussions, LigTel granted Sandhills a limited right to use LigTel’s HNI code. Exhibit 12 is a true and correct copy of the July 3, 2019 letter granting Sandhills a limited right to use LigTel’s HNI code, and Exhibit 13 is a true and correct copy of the July 31, 2019 email and letter from LigTel extending Sandhills’s limited right to use.

26. After we learned that Baicells was using an HNI code that appears to the world to be LigTel’s, I investigated further. I spoke with others in the industry to see if any other entities were using Baicells’s equipment. I learned that New Lisbon Broadband and Communications (“New Lisbon”), an Indiana company, was using Baicells’s equipment. I called the company and learned that it was indeed using an HNI code that appears to the world to be LigTel’s and that Baicells had directed them to do so. We informed New Lisbon that Baicells was not authorized to use LigTel’s HNI code or an HNI code that appears to the world to be LigTel’s. New Lisbon was not aware that it was improperly using an HNI code that appears to the world to be LigTel’s. It also confirmed that Baicells had directed it to use LigTel’s HNI code.

**IV. Baicells Unauthorized Use of LigTel HNI Code**

27. On or around July 12, 2019, I reached out to Baicells. I spoke with Rick Harnish, Baicells' Director of WISP Markets in North America, and we decided that the two entities should meet in person. Accordingly, on July 29 2019, Baicells came to our offices in Ligonier. I participated in this meeting with Baicells.

28. On the Baicells side, the meeting was attended by Rick Harnish; Bo Wei, North American President of Baicells; and Ronald Mao, the Baicells technical advisor who worked on LigTel's core when he was formerly employed at Huawei.

29. As previously mentioned, Mao worked at Huawei prior to his employment at Baicells and worked directly with LigTel on technical aspects of projects related to LigTel's LTE core. Mao had access to LigTel's confidential trade secrets, including LigTel's encryption code (which masks the content of traffic between LigTel's core and subscribers), and LigTel's network architecture (which is the proprietary operational layout of LigTel's equipment, core, and servers). LigTel representatives included Randy Mead, LigTel's CEO and General Manager; Josh Wentworth, LigTel's Network Operations Supervisor; Mike Troup, LigTel's Network Operations Manager; and counsel for LigTel.

30. After the meeting, Mead told me that Wei had privately offered to have Mao "get into" and reprogram our Huawei core himself. He then restated this to the whole group. I took that statement to mean that Baicells had the ability to access LigTel's network and reprogram LigTel's core, meaning that Baicells already possessed LigTel's trade secrets.

31. Since that meeting, Baicells has not agreed to return LigTel's trade secrets or to not use those secrets.

**V. ATIS Relief Process**

32. It is my understanding that Baicells's use of an HNI code that appears to the world to be LigTel's disregards the ATIS guidelines. I am familiar with these guidelines from my work at LigTel. Accordingly, we decided to pursue relief through the IMSI Oversight Council (IOC), a committee within ATIS. This committee maintains and ensures compliance with the *IMSI Assignment and Management Guidelines and Procedures*. ATIS offers parties a way to attempt to voluntarily resolve disputes related to HNI codes without interfering with the parties' right to pursue relief elsewhere.

33. On August 21, 2019, our attorney sent Tom Goode at ATIS a letter regarding Baicells's use of an HNI code that appears to the world to be LigTel's. Exhibit 14 is a true and correct copy of the August 21, 2019 letter LigTel sent to Goode at ATIS. The letter explained that LigTel was requesting formal action from ATIS and/or the IOC to resolve Baicells's ongoing unauthorized use of an HNI code that appears to the world to be LigTel's. The letter further explained that Baicells's use of an HNI code that appears to the world to be LigTel's violated regulations and frustrated LigTel's ability to maintain up-to-date and accurate assignment records as required under the IMSI Guidelines. Our letter requested that the IOC direct Baicells to immediately cease and desist from using HNI 311980 or any substantially similar network identification code (such as PLMN 31198) within any portion of its operations. Around this time, I learned that Baicells obtained its own HNI code, 314030. Yet, it has not fully migrated its customers to that code or stopped using LigTel's code.

34. As a part of this process, Baicells submitted a migration plan to ATIS, and periodically submits progress reports regarding that migration plan. The most recent report, from March 2020, is a 5-page PowerPoint that (like prior submissions) is vague and does not address its

customers' continued use of LigTel's HNI code in their SIM cards. To my knowledge, Exhibit 15 is a true and correct copy of the presentation that Baicells submitted to ATIS in March 2020.

35. It is my understanding, that Baicells is not replacing SIM cards for its customers using LigTel's HNI code. Thus, LigTel's HNI will continue to be used by persons or entities who are not LigTel end users. Accordingly, it appears that the LigTel HNI code will still be used by Baicells despite the IMSI Guidelines, which assign one HNI code for each valid network operator.

36. Baicells has told us that it would begin using new SIM cards for its new customers (with its new HNI code) and that it will broadcast this new HNI code for its customers using LigTel's HNI code. There are a variety of reasons why Baicells's plan to not change its SIM cards is not effective. For instance, even if Baicells broadcasts its new HNI code for its SIM cards still using LigTel's HNI code, individual users would still have SIM cards with IMSI numbers beginning with LigTel's HNI code. As a result, law enforcement would still identify individual subscribers as LigTel customers—and could order LigTel to provide information about a Baicells customer, which it would be unable to do. There is also a risk that users could have identical IMSIs, which again poses a great risk of confusion if law enforcement need to identify a person by this code. This creates a serious public safety issue.

37. As another example of its deficiency, when a Baicells subscriber connects to another network via roaming, the other network would identify the customer as a LigTel customer, when it was a Baicells consumer, because other operators are looking for six-digit HNI codes. LigTel could then be erroneously charged instead of the Baicells customer—and if LigTel refuses to pay roaming charges that other networks believe they are owed, LigTel will further suffer.

38. Finally, any interference that appears to generate from LigTel's network makes LigTel appear to be unable or unwilling to operate its equipment correctly, and makes other

providers believe that LigTel operates its network without complying with international and industry-imposed telecommunications rules. This puts LigTel in a difficult position when negotiating cross-border and roaming agreements, which it is required to do. If other carriers believe that LigTel is not properly operating its network, LigTel's ability to secure favorable agreements for its customers will suffer.

**Current Action: *LigTel v. Baicells***

39. In sum, the ATIS process proved ineffective—among other things, Baicells has refused to propose an acceptable or credible resolution to the situation, has failed to provide a binding and detailed timeline of when it will cease using an HNI code that appears to the world to be LigTel's, and has intimated that it may take the position that ATIS lacks authority to order relief.

40. In addition, the monthly ATIS submissions from Baicells are vague and do not account for the issues of its continued use of LigTel's HNI code.

41. If LigTel's customers learned that Baicells was using an HNI code that appears to the world to be LigTel's or had LigTel's encryption code, it would cause customers to lose confidence in LigTel, because customers would wonder whether their own information had been compromised and whether LigTel's network remained secure.

42. LigTel is unaware of the full scope of Baicells's use of an HNI code that appears to the world to be LigTel's—LigTel cannot determine how many subscribers in how many jurisdictions appear to be LigTel subscribers based on their HNI code, but are not actually LigTel subscribers.

43. I do not believe that Baicells has any good faith intention to stop using an HNI code that appears to the world to be LigTel's or to stop possessing or using LigTel's trade secrets.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on April 3, 2020

Josh Wentworth

